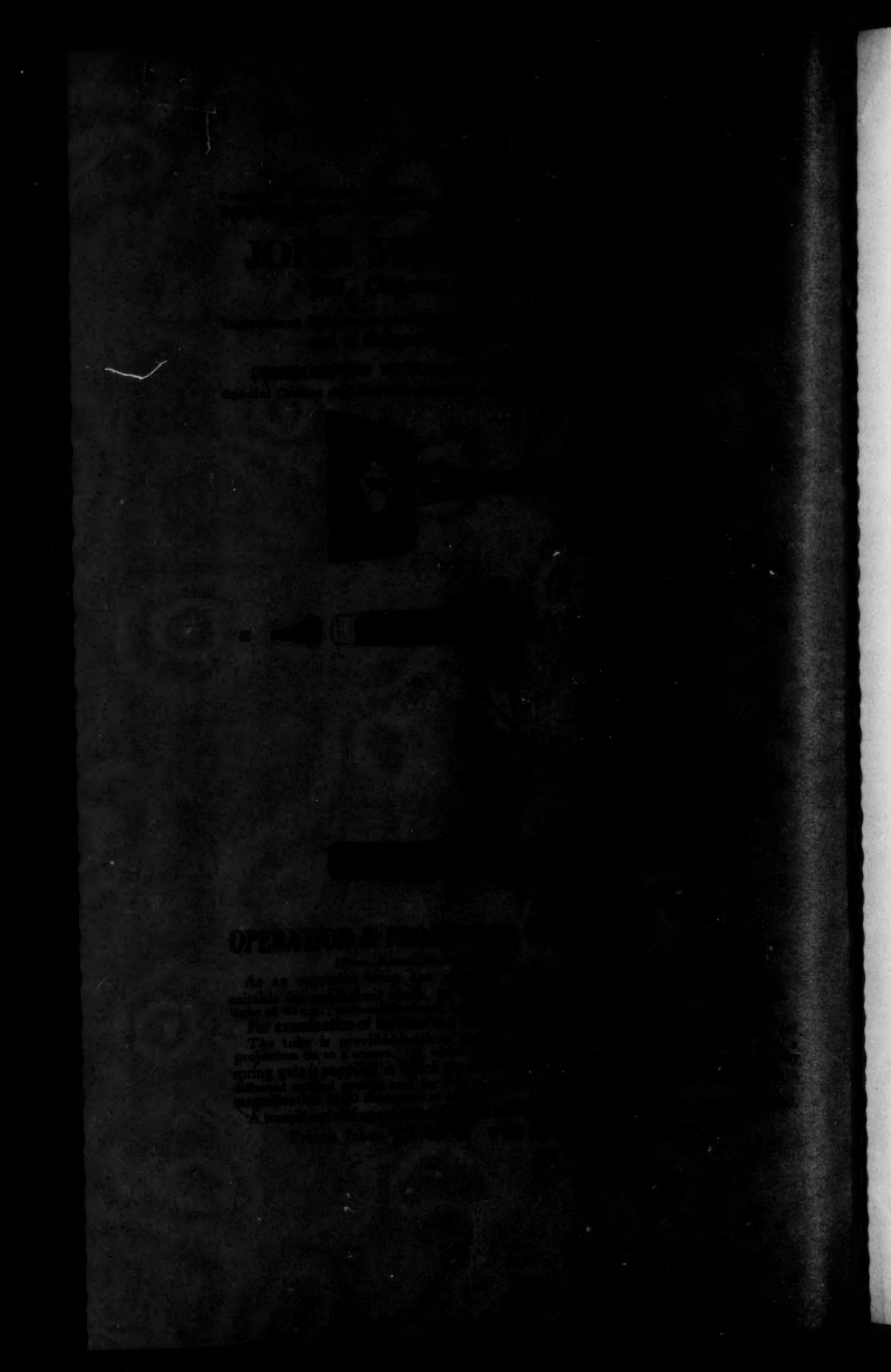

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COMMUNICATIONS

INFLAMMATORY PSEUDO-TUMOUR OF THE ORBIT*

BY

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LONDON

THE term "inflammatory pseudo-tumour of the orbit" has a clinical rather than a pathological significance. It denotes a condition which outwardly resembles an orbital tumour—giving rise to proptosis, limitation of movement, increase in bulk of the orbital tissue and possibly swelling of the lids. The onset is slow and there are none of the usual signs or symptoms of inflammation. Frequently it is only when the orbital contents are submitted to microscopical examination that the true condition is revealed—and then not always with certainty as we shall see later. Macroscopically, the appearance of the orbital contents, if removed *en bloc*, may strongly suggest the presence of a tumour.

These cases are somewhat rare, and in a recent paper by Benedict and Knight[1] of the Mayo Clinic, it is stated that since Birch-Hirschfeld's[2] original description in 1910 only five cases have been reported. One hopes that with further refinements in diagnosis the cases will become rarer still, since, by definition, only those cases which so closely resemble an orbital tumour as to be indistinguishable from it come into this category.

Though not strictly a pseudo-tumour, in that the condition was diagnosed and the eye saved, it may be of interest to refer to the case

*A paper read at a meeting of the Section of Ophthalmology, Royal Society of Medicine, February, 1925.

mentioned by Mr. Trotter, in the 1923 discussion on proptosis[3]. This case was sent to him by Mr. Harrison Butler with a history of prominence of the right eye for four years. The trouble began with some kind of inflammatory condition which subsided, leaving the proptosis which was thought to be increasing of late. Though there was serious reason to fear a slowly developing malignant growth the eye was left, and three years later Mr. Butler reported that vision and fundi were normal, though the proptosis was still severe.

With regard to cause, Benedict and Knight are inclined to attribute the occurrence of these pseudo-tumours to focal infection elsewhere in the body, such focal infections being overlooked as they produce no symptoms and no leucocytosis. This of course may be possible, but the evidence in each case would require very careful sifting. One cannot help feeling that the presence of a focal infection is no great rarity in otherwise normal individuals. I know for instance of a dental surgeon who has been nursing an apical abscess for the last few years. Its presence was discovered accidentally by X-rays, and as he has never had any symptoms referable to it, he has every intention of keeping the offending tooth unless such symptoms arise. I have no wish to underestimate the importance of focal infection, and the excellence of the results one has seen following its elimination, but one must avoid any tendency to making it a sort of scrap heap for otherwise undiagnosable types of disease.

Birch-Hirschfeld gave a useful classification of pseudo-tumours.

GROUP 1.—Those in which the recovery is spontaneous or occurs after the administration of drugs, such as potassium iodide, mercury or quinine.

GROUP 2.—Those in which an operation is performed and no tumour is found.

GROUP 3.—Those in which the macroscopical appearances of the orbital contents suggest the presence of a tumour, but the microscopical appearances show the tissue to be a chronic inflammatory mass.

The cases I propose to discuss are three in number, and I am indebted to the surgeons under whose care they were for permission to refer to them. The pathological examinations were carried out at the Central London Ophthalmic Hospital.

The first case occurred in a man, F.B., aged 25 years. He attended hospital on July 17, 1924, with marked proptosis of the right eye, and a lot of conjunctival injection. The movements were full and normal. Rhinological examination being negative and the proptosis considerable, he was ordered mercury and iodide without waiting for a Wassermann test. Three weeks later some

limitation was noted in the movement of the right eye, and the proptosis became more marked. The eye appeared to be otherwise normal and the vision with glasses was 6/12, the same as in the left eye.

He was taken into hospital on August 21, mercury inunctions and potassium iodide being continued for a further fortnight without any diminution of the proptosis. The condition was deemed urgent because the proptosis might be due to an orbital neoplasm. An exploratory incision was therefore made and revealed a hard

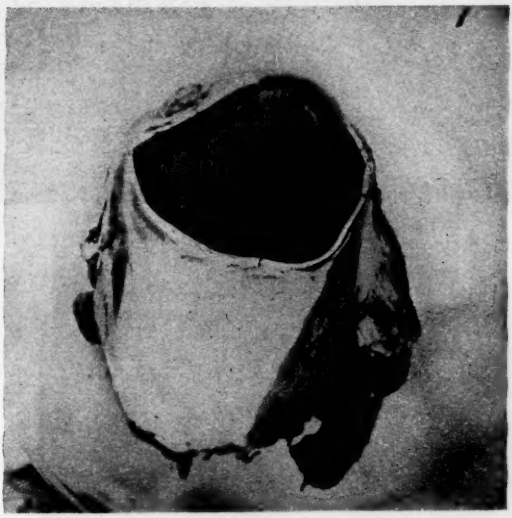


FIG. 1.

mass of tissue in the orbit and no pus. Exenteration was deemed advisable, and was performed on September 11, 1924.

Fig. 1 shows the general macroscopic appearances of the orbital contents. There is a large white mass within the cone of muscles moulded closely over the posterior surface of the sclerotic and completely surrounding the optic nerve.

A section of the anterior portion of the mass containing the optic nerve (Fig. 2) shows marked thickening of the dura which is in contact on one side with orbital fat, and on the other is continuous with the dense fibrous tissue mass. This section is stained with iron haematoxylin and van Gieson's stain, so that the fibrous tissue shows up conspicuously. The nerve itself does not seem to have been affected—the apparent separation of the fibres being an artefact produced during cutting of the sections.

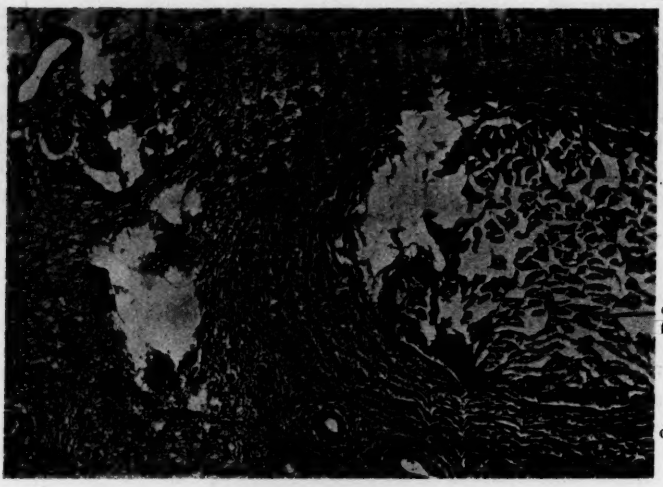
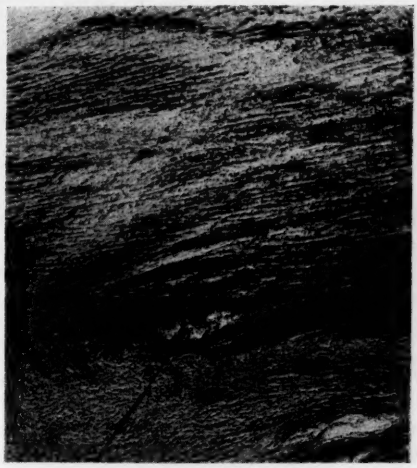


FIG. 2.

FIG. 3.

1. Vessel showing thickening of walls; 2. Obliterated vessels; 3. Focus of lymphocytic infiltration.

Fig. 3. The next section is fairly typical of the greater portion of the mass. It is stained with iron haematoxylin and van Gieson and is composed almost entirely of lamellae of fibrous tissue, staining deep red, with here and there, some foci of lymphocytic infiltration. An important feature of this section is the condition of the vessels. They show great thickening both of the intima and adventitia, in other words a definite endarteritis and periarteritis. In some portions, this condition has progressed to an extent sufficient to cause obliteration of the vessels. Areas of necrosis were conspicuously few. In parts the fibrous tissue had



Area of necrosis in muscle fibres.

FIG. 4.

rather an indeterminate and gummatous-looking structure, but the only area showing any definite break-down of tissue was in one of the muscles. This is shown in Fig. 4, where one notes a gap in the structure of the muscle surrounded by an infiltration of lymphocytes.

Summing up then, there can be little doubt that the apparent tumour in this case was a gumma so that the condition can be classified as an inflammatory pseudo-tumour.

It bears a strong resemblance to a case described by Hine in 1922[4], when the orbit was exenterated and found to be occupied by a large mass of tissue. There was similar thickening and infiltration of the dura round the optic nerve, and the arteries showed extreme thickening. The mass also contained patches of lymphocytic infiltration. The opinion of the pathologist who

examined the slides was that "the tumour was a chronic inflammatory mass, the absence of giant cells making tuberculosis unlikely, and the presence of changes in the vessels suggesting a syphilitic origin." The Wassermann reaction was negative, and the condition was regarded as being possibly neurofibromatosis. With regard to the value of a negative Wassermann in tertiary syphilis, Harrison[5] states the following:

"A negative report is of little value in excluding syphilis, since there is practically no stage of the disease in which 100 per cent. of positive reactions are obtained. Considering only the tertiary stage, it is stated that out of 255 untreated cases 98.4 per cent. were positive, if treated cases were included, the percentage fell to 83." These figures presumably apply to cases presenting clinical manifestations of active disease. "It is a very frequent occurrence to obtain a negative reaction in cases of syphilis where there is just one small lesion, as for example, an ulcer on the side of the tongue. . . . Help is sometimes obtained in doubtful cases by the effect of a provocative injection of salvarsan or one of its derivatives."

In view of this and the change described, I think one may regard this case as similar to the one I have described and as being an orbital gumma. A somewhat similar case is included in the paper by Benedict and Knight, where a mass was removed from the orbit. Microscopically, it was composed of fibrous tissue, infiltrated with lymphocytes collected into groups resembling follicles. Practically all the smaller vessels showed endarteritis, progressing in some parts to complete obliteration. Here again the Wassermann was negative. If this tumour were also in reality a gumma, it goes to show the immense clinical importance of this condition and to emphasize the necessity for a thorough anti-syphilitic treatment even in face of a negative Wassermann. An important case in this connection was alluded to by the late Mr. Johnson Taylor in the *Transactions of the Ophthalmological Society*[6], where the administration of mercury had to be pushed to such an extent as to give the patient a diarrhoea resembling dysentery before the condition cleared up.

The second case occurred in a middle-aged man, who in December, 1922, consulted Dr. Hewkley, to whom I am indebted for the history. He had had influenza in February of that year and coincidentally severe hemicrania spreading down the left arm and left side of the chest. The pain was severe for three days, and finally ceased at the end of a fortnight. The patient could not say exactly when diplopia commenced, but had noticed inability to play bowls or snooker, at both of which he had been expert. When seen by Dr. Hewkley both eyes were prominent and the left showed definite proptosis, the vision with correction being 6/9,

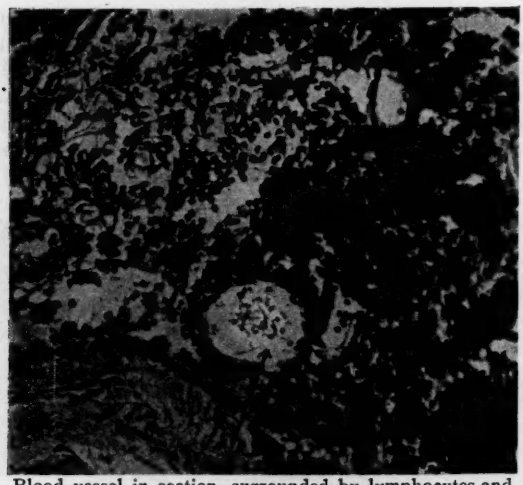
while that of the right with correction was 6/6. The left fundus was normal, and there was paresis of the superior rectus and levator palpebrae; there was also some weakness in closure of the lid. As time went on this weakness increased and there was more marked chemosis and proptosis. Owing to the exposure of the cornea, due to the proptosis, a small ulcer developed on it. The

FIG. 5.

1. Vessel cut longitudinally; 2. Vessel cut transversely; 3. Patch of lymphocytic infiltration.

eye was eventually removed and the orbit exenterated as there was a strong suspicion of a malignant growth.

The orbital contents were removed piecemeal and small portions were embedded in paraffin and sectioned. There was nothing in the appearances to suggest a neoplasm and having recently read the article I have alluded to by Benedict and Knight, I was much inclined to make the diagnosis of inflammatory pseudo-tumour, especially when I came across a portion of tissue presenting the appearance shown in Fig. 5. There are three blood-vessels, one cut longitudinally, two transversely, and surrounding them is a fairly dense infiltration of cells which under the high power prove to be lymphocytes. It therefore appeared to be a clear case of some chronic blood-borne infection with the tissue reaction most marked around the blood-vessels. Closer inspection, however, revealed a somewhat different state of affairs. In the first place



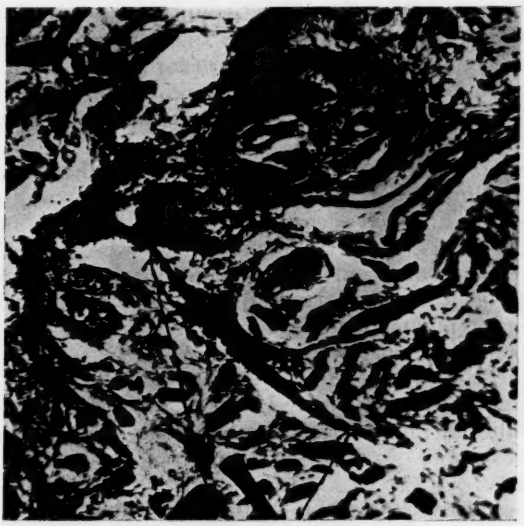
Blood vessel in section, surrounded by lymphocytes and containing red blood corpuscles.

FIG. 6.

FIG. 7.

1. Transverse section of lymphatic vessel; 2. Vessel passing obliquely through thickness of section.

(Fig. 6), the blood-vessels, though surrounded by lymphocytes, showed no evidence of any proliferative activity in their walls. Secondly, although there was some patchy infiltration of the extra-ocular muscle fibres, they were not broken up and they also did not show any proliferative activity. Thirdly (Fig. 7), there were several patches without a blood-vessel in their centre, but with a clearly marked lymphatic occupying this position, as shown in this slide, where one can see a lymphatic vessel passing obliquely



Lymphatic vessel in longitudinal section.

FIG. 8.

through the thickness of the section. In another part of the section (Fig. 8) I was lucky in cutting one of these vessels longitudinally and here one can see the cells passing along in the line of the wall of the lymphatic. These appearances suggest that the condition may be a lymphoma, and not inflammatory. Unfortunately, I have not been able to obtain any figures relative to the blood count which might have been of assistance in the diagnosis. Ewing[7] in his account of this form of tumour refers to the difficulty of diagnosis between lymphocytic proliferation due to inflammatory change, and due to neoplastic activity. In fact, one to a certain extent merges into the other. Thus, according to Paltauf, the regeneration of lymphocytes following an acute infection may be

excessive and prolonged, giving rise to a tumour-like overgrowth which persists long after the removal of the bacteria and their products. The tumours form solid masses, with little or no tendency towards necrosis. After reaching a certain limit of growth they may remain stationary for months or years. The structure is dominated by diffuse overgrowth of small lymphocytes —a conspicuous feature of the present case. In a case described by Richardson Cross in 1916[8] as lymphoma, there was symmetrical proptosis, swelling of the eyelids, slight impairment of vision, and some defect in movement of the eyes. He was first seen in August, 1915. The blood count was practically normal. Graves' disease was excluded and in spite of searching investigations nothing could be found to account for the condition. He was watched for a year during which time no change occurred in the proptosis. No pathological examination was made as there was no indication for operation.

Cross refers to several other cases. One of them reported by Treacher Collins, occurred in an infant, aged $1\frac{3}{4}$ years, who came with proptosis of the left eye on January 9; it had been noticed for about three weeks. On March 13 there was marked bilateral proptosis. Death occurred four days later. Separate tumours were found in the two orbits, consisting of small nucleated cells resembling lymphatic gland tissue. Similar nodules were scattered over the body in almost every organ.

Lagrange[9], in an account of 24 cases, notes that in all there was proptosis of the two eyes. If this is to be taken as a criterion of the condition, then the diagnosis of lymphoma in the present case would have to go, as, up-to-date, proptosis has been noted in only one eye.

The most likely explanation in the case I am describing would seem to be the following. The patient had influenza in February, 1922, which lowered his resistance to bacterial attack. In consequence he developed an infection at the back of the orbit, possibly the result of transference of organisms by the blood stream from some distant focus. The left hemicrania might be due to involvement of the branches of the ophthalmic division of the fifth nerve. The patient's resistance improves and within a fortnight the infection subsides. There is left, however, a mass of lymphocytes, which, as in the tuberculous cases, continue to multiply long after the infecting organisms and their products have been removed. A case showing similar histological characters is described in the paper already alluded to, by Benedict and Knight. It shows leucocytic infiltration of the muscles, most dense around the vessels where there are also numerous endothelial cells. It has been shown that lymphocytes arise by metamorphosis of the proliferated endothelial cells so that the condition represents a

slightly earlier stage than that exemplified in the case I have described.

The third case is an example of a small mass of young connective tissue forming as a result of irritation induced by the presence of cholesterin crystals. It was discovered by accident in a blind eye removed for a supposed intraocular tumour. The intraocular mass turned out to be an old organizing blood clot, and I reported the case to the Ophthalmological Society in 1922[10]. The patient died some two years later from sarcoma of the ilium. It is unlikely that

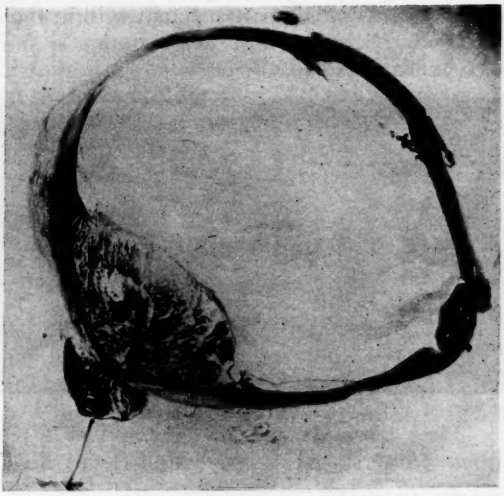


FIG. 9.

Mass outside sclera.

this was a metastatic deposit from the eye, when one takes into consideration the local appearances.

The point to which I wish to call attention is the presence, outside the sclera of the mass of tissue shown in Fig. 9. It is comparatively small and probably did not produce any definite exophthalmos, as there is no note of this condition in the history, though marked chemosis was observed.

Examination under a higher power (Fig. 10) shows a fairly cellular type of connective tissue arranged in lamellae which enclose spaces. The shape of these suggests that in the fresh state they were occupied by crystals of cholesterin, which were dissolved out during fixation. This supposition is strengthened

by the fact that the intraocular change was probably the result of repeated haemorrhages.

There is little doubt that if the intraocular condition had not necessitated enucleation, the continued growth of this mass of tissue would soon have brought about proptosis and the condition of inflammatory pseudo-tumour of the orbit. It may, at first sight, seem a little far fetched to label this inflammatory. It represents, however, the reaction of tissue to injury, though in this case the exciting substance is non-bacterial. Lafon[11] reports a more advanced case, probably of the same type. He states that, excluding subperiosteal haemorrhages which are nearly always scorbutic, blood extravasated spontaneously within the orbit is in

Newly formed fibrous tissue.

FIG. 10.

general quickly absorbed, causing disappearance of the exophthalmos. In some cases, however, the eye remains proptosed. This may be due to the blood becoming encysted or to a proliferative reaction of the orbital connective tissue. He gives details of one such case which occurred in a man, aged 34 years. Two years previously on rising in the morning he had noted unilateral proptosis, which steadily diminished during the day and disappeared during the course of the next few days. Since then, the condition had recurred about ten times, clearing up again within a few days. Each attack, however, was a little worse than the preceding one. No ecchymosis occurred. A month before seeing Lafon he had had his worst attack. During this, vision was temporarily deranged, and the exophthalmos persisted to a considerable degree. When seen, the movements of the globe were good but not quite full, vision and fundi normal; there was 8 mm. of exophthalmos. The condition improved as the result of treat-

ment, but there was a bad recurrence two months later, and the orbit was exenterated. The muscles were enlarged and covered with a species of fibrous tissue. The main mass of the pseudo-tumour was composed of bundles of fibrous tissue, in some parts enclosing collections of red blood cells. Microscopical investigation showed that the reaction was in all probability caused by the repeated haemorrhages. He has been unable to find more than two similar cases. A point of interest in Lafon's case is that the blood coagulation time was markedly increased and that there was slight anaemia. Otherwise there was nothing abnormal.

Summing up then we have three cases of pseudo-tumour of the orbit in which the aetiology seems fairly clear. In the first the inflammation is gummatous, in the second there is lymphatic hyperplasia following on a post-influenzal orbital infection, and in the third there is proliferation of fixed connective tissue cells consequent on their irritation by the products of haemorrhage.

The pre-operative diagnosis and treatment of this condition are at once the most important and the most difficult part of the subject. A negative Wassermann test does not necessarily exclude the presence of a gumma, though the effect of a heroic course of mercury, as in Johnson Taylor's case, may settle the diagnosis. With regard to blood counts Marbaix and van Duyse[12], in a report of a case of pseudo-blastoma of the orbit, found lymphocythemia in a differential white count. The proportion of lymphocytes was not such as to allow of the diagnosis of lymphatic leukaemia, and it was deemed to be pseudo-leukaemia. Krönlein's operation had been performed previously with a negative result except that the lacrymal gland was enlarged and found to be infiltrated with the lymphocytes. Incidentally, neuro-paralytic keratitis developed as an after-result of the operation. These authors are of opinion that hyperplasia of the orbital lymphatic tissue may be the only manifestation of a general disease, apart from the blood changes which such a disease engenders.

In two of Benedict and Knight's cases, however, where a differential white count was done, there was no lymphocytosis.

Diagnosis of these cases is admittedly difficult and in a sense it involves consideration of all the possible causes of proptosis. I do not propose to go over these, as they have been exhaustively dealt with in the discussion on proptosis at the 1923 meeting in London of the Ophthalmological Society. It is of interest to note, however, that during this discussion the only case of inflammatory pseudo-tumour mentioned was that to which I have already alluded, and a possible one alluded to by Juler.

One must attempt then to outline some sort of procedure which would be of service in excluding this condition in cases of unilateral

proptosis simulating orbital tumour. As a basis of discussion, I should like to suggest the following, though the list seems rather formidable. Examination of the urine, especially for sugar. Performance of a Wassermann reaction which, if negative, should be repeated after a provocative dose of salvarsan. Exclusion of tuberculous infection, if necessary, by a complement fixation reaction or one of the tuberculin tests. Differential blood count, and estimation of blood coagulation time. Careful search for focal infections and radiographic examination of teeth and sinuses. The history, of course, as in Harrison Butler's case, may be of paramount importance, and one must always remember the possibility of early Graves' disease. Finally, an exploratory operation might be indicated before proceeding to a radical extirpation of the complete contents of the orbit.

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TWO CASES OF CEREBRAL ANEURYSM CAUSING OCULAR SYMPTOMS WITH NOTES OF OTHER CASES

BY

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I HAVE had recently several interesting cases of cerebral aneurysm. Two of them, being of a type somewhat rare, are described at length, and notes of some other cases are appended. The occurrence of these cases has raised in my mind the whole question of cerebral aneurysm, and I have found it to be of interest to collect and collate the data of all my cases and many others that have gone to post-mortem examination in the Glasgow

Royal Infirmary. In the hope that these details may be of interest and profit to others, I now publish the results of my experience. The two cases described at length were in the Royal Infirmary under Dr. J. M. Cowan, whom I now thank for help in the preparation of this article and for the generous loan of notes, photographs, and sketches. It is a curious fact, that when considering possible causes of cerebral symptoms, aneurysm of a cerebral vessel rarely suggests itself, and the following reasons have occurred to me, why this should be so. In the first place a cerebral aneurysm may exist and give rise to no symptoms that we can recognize clinically. Secondly, as this condition is often the cause of sudden serious symptoms, followed by rapid death, there is no opportunity to study the prodromal symptomatology. Thirdly, age gives no clue as to its probable presence or absence, as it is a condition which may be present at any age. Finally, I know of no particular diathesis or constitutional state which favours the existence of this condition, or would lead me to suspect its presence, as against other cerebral neoplasms. Therefore, it is true to say that cerebral aneurysm rarely gives opportunity for clinical study, and that this diagnosis is equally rarely hazarded.

Writers on this subject, as far as my knowledge goes, are unanimous that the condition is of frequent occurrence. Osler[1] found 12 cases in 800 autopsies at the Montreal General Hospital. Newton Pitt's[2] collection from Guy's Hospital gives 19 in 9,000 inspections. Bradford[3] says the condition is not uncommon, whilst Fearnsides[4] says, "the presence of a saccular aneurysm on one of the basal cerebral arteries at necropsy is one of the commonest pathological findings."

In a search of the records of the Pathological Department of the Glasgow Royal Infirmary (permission for which was most willingly granted by Professor J. H. Teacher) I found 43 cases of undoubted cerebral aneurysm among 6,325 sections. A survey of the literature of this subject, reveals a plenitude of cases, and to add others to that number is unnecessary, but interest is given to my first case, by the fact that hemianopia formed the most prominent symptom throughout the illness. Bramwell[5] and Weir Mitchell[6] have published similar cases, but in a fairly extensive search of the English literature published during the last twenty years on this subject, I have been unable to discover any allusion to another case of this type.

Interest is given to the second case, by the fact, that in my experience, ocular symptoms in cases of cerebral aneurysm are not of common occurrence, unless following on a cerebral haemorrhage.

The history of the first case is as follows:

Q.D., aged 23 years, a butcher, was shown by me at the May, 1923, Meeting of the Scottish Ophthalmological Club, as a case of pituitary tumour, in which great alleviation of symptoms had taken place. I saw the patient first on March 25, 1923, on account of curious symptoms connected with vision. He stated that he had suffered from pains in the head for the last eight months. The pain came on in attacks, and during the attacks the pain was intermittent in character. At the onset of his illness the pain started in the right temple, and with each succeeding attack it travelled further back, until it became fixed in the right occipital region. In this region it was localized for a month, and during this time he noticed that the vision of the right eye had failed. The pain then started in the left temple, and in repeated attacks travelled backwards in the same way. Lifting heavy weights, and impure atmospheres brought on the pain. Coincident with the onset of pain in the left temple, he noticed that the vision of the left eye was failing.

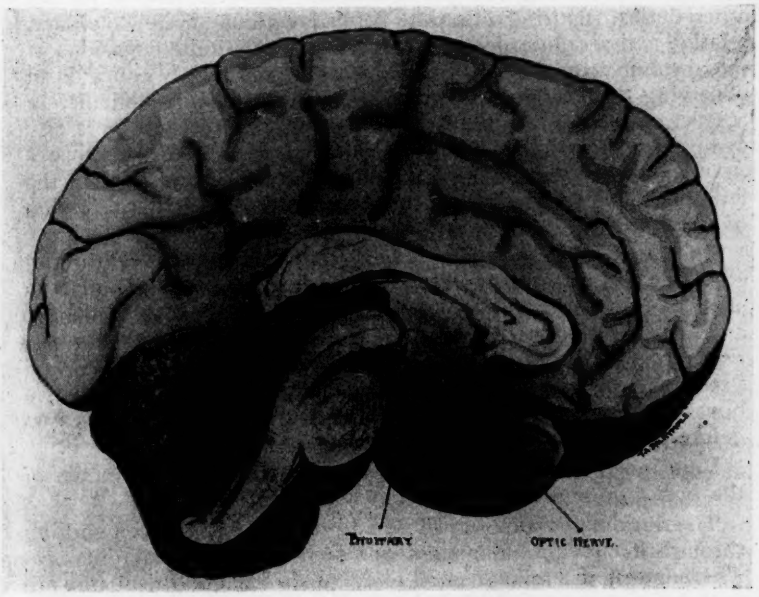
On the first examination he volunteered the statement, that when he looked at two people at a distance, one of them would disappear and reappear. At no time during his illness was there any vomiting, though at times he felt nausea. The family history was good. The father and mother are alive and in good health. There were nine children in the family, all of whom were still living and well, with the exception of one who died in infancy. There had been no miscarriages nor stillbirths. His social condition called for no comment. He came from a good home. In appearance he looked a healthy well-developed young man. On examining the eyes, the right pupil was found to be larger than the left. The pupil reflexes were normal, though somewhat sluggish to light for a young subject. Hippus was observed. Both discs were noticeably pale. Right vision equalled hand movements. Left vision equalled fingers at six feet. The visual fields showed bitemporal hemianopia (Chart 1). A tentative diagnosis of pituitary tumour was made, and I sent him to Dr. John Cowan, Glasgow Royal Infirmary, in whose wards I have the privilege of working.

Examination of the general system did not reveal much to help us towards a diagnosis. The patient was apparently healthy in every other respect. The Wassermann reaction (blood and cerebro-spinal fluid) was returned as negative. The blood pressure was systolic 115, diastolic 65. The X-ray report read as follows: "There appears to be some expansion of the sella Turcica, together with thinning of the floor. There is no evidence of bone erosion to indicate a malignant growth."

During his residence in the Royal Infirmary, he became quite blind in both eyes, and there followed a period during which it

CASE 1.

(1) Aneurysm as seen on opening calvarium and lifting up brain.



(2) Diagramatic antero-posterior mesial section showing anatomical relationship of aneurysm.

was impossible to examine the visual fields. Mr. Pringle saw him with a view to operation, and while agreeing with the diagnosis, expressed the opinion that it was not a suitable case for operation. The vision returned to a slight degree in each eye but progress was minimal. He was discharged from the Royal, and at my request Dr. J. Barbour Stewart admitted him to his beds in the Glasgow Eye Infirmary for further observation. Soon after admission his vision began to improve sufficiently to permit of investigation of the fields again, and a series of charts was obtained, taken at intervals of a week. He was discharged from the Glasgow Eye Infirmary in June, 1923, and attended as an out-patient until his death seven months later. During this period he was seen on many occasions. His general health continued satisfactory, and the eye condition steadily improved. The notes in his case-sheet, as regards the fundi, state that both optic discs are definitely paler than normal. He always complained of pain in the left malar region, and left temple, but the pain was never so severe as to cause him to be laid up, or to call for treatment. He went for a holiday to Scarborough, and though, on advice, he did not indulge in any strenuous exercise, still long country walks caused him no inconvenience. Soon after his return from holiday, he resumed his work as a butcher. He refrained from lifting any heavy weights, but was quite fit for his other duties. During this time he had various small scotomata, relative and absolute, in both fields. He was quite conscious of the absolute scotomata, as by this time he was highly educated in observing this symptom, but he easily overcame any difficulty in respect of these. At no time did he complain of, nor were any symptoms observed, pointing to irritation of a motor or sensory nerve, with the exception of the slight headache and pain in the left cheek, referred to above, which pointed to an irritative lesion of the first branch of the fifth nerve.

On the morning of January 12, 1924, the patient was bright and cheerful, and took his breakfast and went to work in his butcher's shop as usual. His brother left the back apartment of the shop, and on his return found the patient unconscious. He was readmitted to the Royal Infirmary. The pupils were dilated and fixed. Temperature 97° F. He was unconscious and died two hours later. Twenty minutes elapsed after respirations ceased before the heart ceased.

I am indebted to Professor Teacher for the following extract of the post-mortem record.

The dura mater was very tense and blood could be seen shining through it. A globular mass was seen filling the sella Turcica. The edge of the sella seemed to be pushed a good deal forward and the optic nerves diverged forward somewhat round the sides

of the mass which filled the sella. The nerves were bent and spread out. The mass was readily dissected out of the sella, and the pituitary, normal in size and appearance, was found lying under it, and rather to the back of the sella. It was easily freed from the widened sella. The posterior clinoid processes stood up very sharply behind, and their anterior surfaces seemed to have been reduced in volume, but everywhere the dura was intact. The processes were not broken. The sella Turcica was considerably enlarged, and perhaps a little deepened. The ends of the carotid arteries lay exposed in the sides of the cavity. The anterior part of the interpeduncular space was occupied by a globular mass, which appeared to be exactly in the middle line, but on careful examination was found to lie a little more to the right. On section the mass was found to be an aneurysm, completely filled with laminated clot. This was of brown colour and was old. The mass was clearly an aneurysm healed by the natural process of thrombosis. In the cut section it measured 2.1 cms. in the antero-posterior, and 1.6. cms. in the up and down directions. It was about the size of a marble. The blood-vessels of the circle of Willis were normal on the left side. On the right side the aneurysm was attached to the middle cerebral on its median and upper aspect. The posterior communicating branch was swollen to a spindle-shaped aneurysm about 0.5 cm. wide. It was soft and thrombosed. No other aneurysm was found, but dissection was limited. The source of the bleeding was therefore not made out. The infundibulum lay on the left side of the aneurysm. The optic nerve roots and chiasma were spread out on the front of it and slightly flattened.

Discussion of the Case

Beadles[7], who collected 555 cases of intracranial aneurysm from the literature and the museums, divided the cases into four groups. In the largest group (46 per cent.) death ensued suddenly from an apoplectiform seizure without any preceding symptoms of cerebral origin. In the second group (20 per cent.) symptoms of cerebral disturbance, but often very slight and equivocal, occurred and were followed by an apoplectiform seizure. In the third group (16 per cent.) cerebral symptoms alone were present. In the last group (16 per cent.) the aneurysm was merely an accidental finding in a case where death had occurred from causes quite apart from the aneurysm. The case which has been described falls into Beadles' second group, but it falls into that rarer class still in which hemianopia occurs as a symptom. The fields of vision make an interesting study, and the following are the steps in the progress of the case.

CHART 1. March 26, 1923.—The left field shows blindness of the temporal half. The right field shows blindness of complete lower half, and segmental defect of upper half. Diagnosis of probable pituitary tumour made. Admitted to Royal Infirmary. Fields gradually become smaller until complete blindness supervenes.

CHART 2. May 11, 1923.—Admitted Glasgow Eye Infirmary. Complete bitemporal hemianopia with great contraction of the nasal fields.

CHART 3. May 25, 1923.—Nasal fields show increase in size. Temporal fields still blind.

CHART 4. June 1, 1923.—A large area in right temporal field has recovered vision. Complains of diplopia. Tested with Maddox Rod, showed a paresis of left internal rectus, *i.e.*, a third nerve involvement.

CHART 5. June 8, 1923.—Dismissed from Glasgow Eye Infirmary. V.R. 6/12; V.L. 6/60. Right field shows a small absolute scotoma around the blind spot, with a larger relative scotoma below, and continuous with the first.

CHART 6. January 9, 1924.—These fields were taken three days before his death. The right field is normal in extent, and except for a small absolute scotoma, which makes an enlargement of the blind spot, is free from defect. The left field shows slight peripheral contraction, and two large relative scotomata. One of these is central in position, the other is continuous with the upper area of peripheral blindness. V.R. 6/9; V.L. 6/12.

It might be thought that the observation of this clinical fact, namely, the clearing up of the visual fields, would have shaken our confidence in the diagnosis, but it is known that changes in the fields in cases of pituitary tumour do occur. The direction of growth of the tumour may become changed, and pressure originally exerted on the chiasma, may become directed elsewhere, thus relieving to a greater or less extent the hemianopic symptoms. On this account the prognosis given was guarded and serious. As subsequent examination proved, it was not a case of tumour of the pituitary body, so that some other explanation must be sought for to account for the alleviation of the visual symptoms. The theory is put forward here, that the improvement in his visual fields, coincided with the thrombosing of the aneurysm. There is no evidence to prove this, but the behaviour of aneurysms elsewhere, when undergoing "cure" is recalled. Clotting of the blood in an aneurysm, usually brings about relief of the pressure symptoms. The fibrin from the blood becomes gradually deposited in a laminated manner on the walls of the sac, so that the aneurysm is completely consolidated, and subsequently by condensation and shrinking becomes converted into a small nodular mass of fibrous

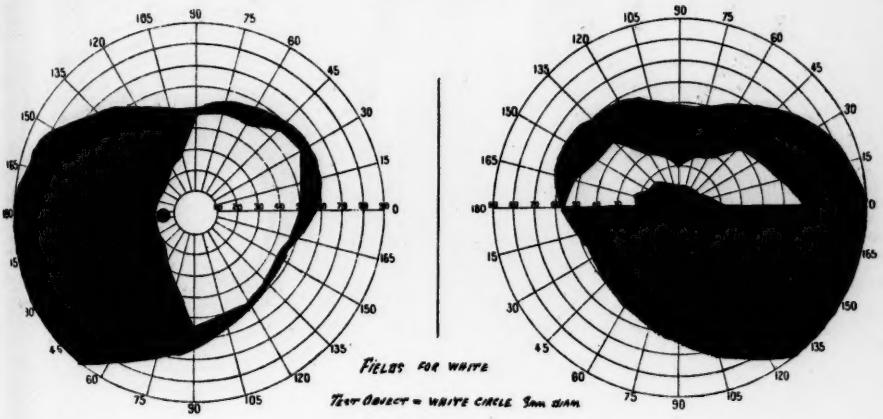


CHART 1.

tissue. It may well be that a similar chain of events had taken place here and, due to the lesser space occupied by the aneurysm when thrombosed, as contrasted with its bulk when blood was circulating through it, pressure on the chiasma was relieved. Up to the time of the first manifestation of improvement of his symptoms, he had received no drug treatment, treatment having consisted simply of rest in bed.

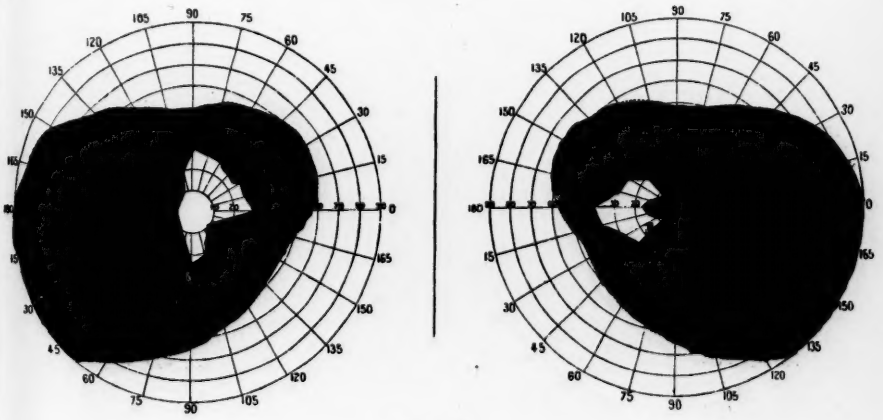


CHART 2.

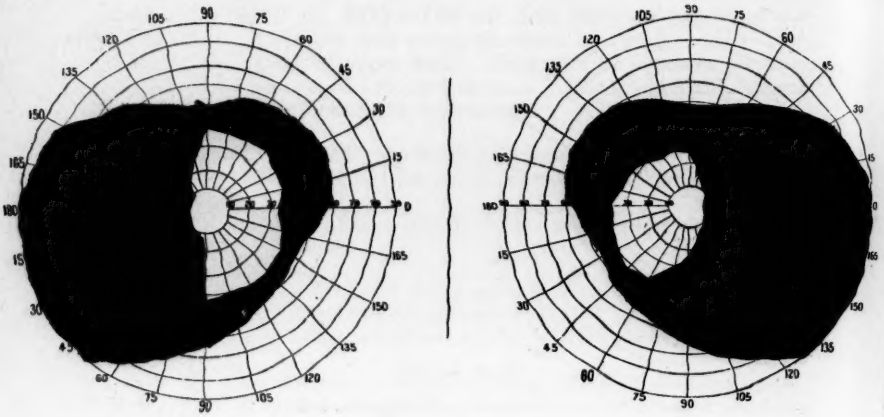


CHART 3.

Another interesting observation in the case is the post-mortem note that "the sella Turcica was considerably enlarged and perhaps a little deepened." This bears out the X-ray report which stated "there appears to be some expansion of the sella Turcica, together with thinning of the floor. There is no evidence of bone erosion to indicate a malignant growth." Examination of the plate taken in conjunction with the clinical evidence of the visual fields,

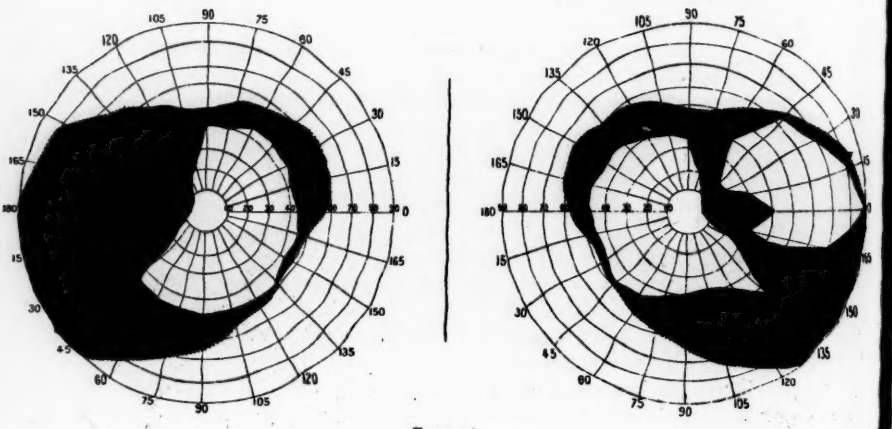


CHART 4.

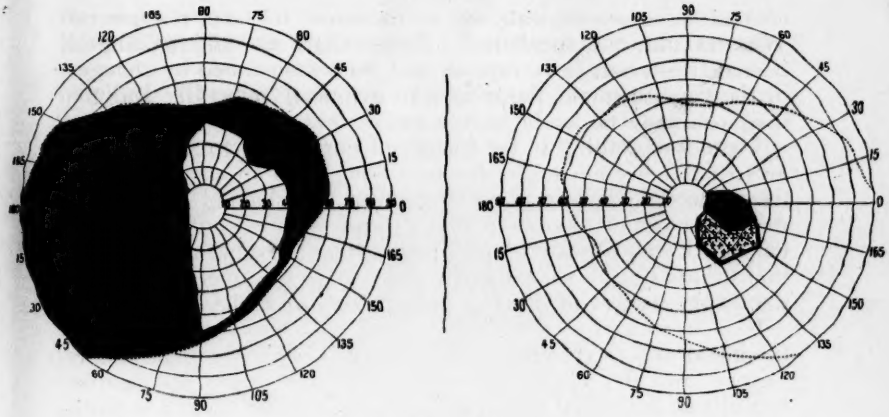


CHART 5.

seemed to confirm the diagnosis of a hyperplasia of the hypophysis. The fact that an aneurysm may cause an increase in the size of the sella must be borne in mind, as witness Oppenheim[8] who quotes Bramwell as saying "it is a remarkable fact that aneurysm of the carotid may cause erosion of the sella Turcica."

One procedure, as an aid to diagnosis, we neglected, was to make a microscopical examination of the cerebro-spinal fluid. We

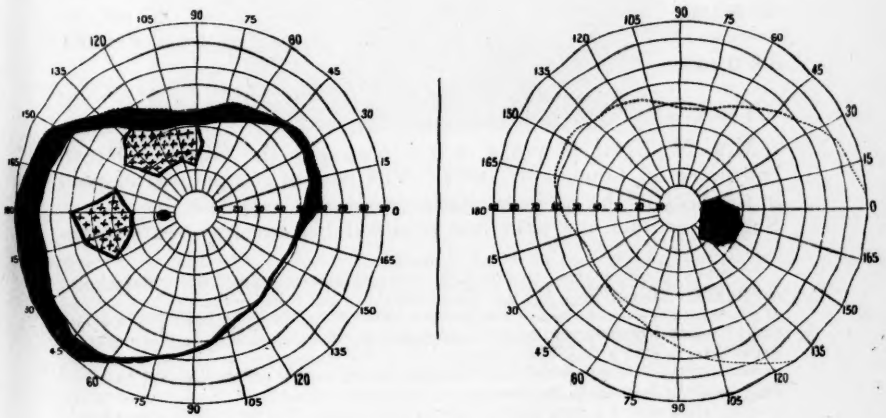


CHART 6.

contented ourselves with an examination for the reaction of Wassermann. Oppenheim[8] states that an intrameningeal haemorrhage caused by rupture may be demonstrated by changes in the cerebro-spinal fluid, found on lumbar puncture, and the diagnosis may be made in this way.

There was nothing in the history of our patient to suggest that an irritative haemorrhage, due to leaking from an aneurysm, had taken place, and there is no mention of such having occurred in the post-mortem report, so that this procedure would not have helped. Parenthetically, I may remark that the same author states that in this type of case, lumbar puncture is absolutely prohibited due to the danger of causing sudden rupture of the aneurysm.*

It is interesting to observe that the Wassermann reaction of the blood and the cerebro-spinal fluid was negative. The family history and the clinical evidence of the case were all against syphilis as being the causal agent. Fearnsides[4] says of syphilis in the aetiology of cerebral aneurysm, that our views with regard to infection with the spirochaete need revision, meaning thereby that syphilis is not the common cause it was formerly suspected to be. My experience of this and other cases, leads me to agree with this opinion. But the chief point I wish to bring out, is that there was nothing in my case to suggest that he was suffering from aneurysm of a cerebral vessel as against any other form of neoplasm, and the conclusion of other writers on this subject is again borne out, that diagnosis of this condition during life is practically impossible. Beadles[7] at the conclusion of his lecture to the Royal College of Surgeons on this subject, says "if there is one sign to which attention might be drawn, it is the occasional intermittent character of the symptoms." And the protean character of this disease was well shown in the case under discussion.

The history of the second case is as follows:

Mrs. N., aged 40 years, was admitted to the Glasgow Royal Infirmary on January 31, 1921. The patient complained of pain in the back of the neck, headache, dizziness, and defective vision. She stated that the pain had troubled her for two years, com-

*When I wrote this, Symonds'[9] very informative paper on subarachnoid spontaneous haemorrhage had not been published, and I was not aware of a method of procedure of examination of the cerebro-spinal fluid which he describes in detail, and to which I recommend readers interested to have recourse. In this paper he draws attention to a very useful distinction in the appearance and behaviour of the cerebro-spinal fluid into which blood had percolated from a subarachnoidal haemorrhage, and the features to be observed in the cerebro-spinal fluid contaminated by the accidental injury of a vein during lumbar puncture. The method of procedure is simple and it seems to me that in cases of leaking aneurysms much valuable information could be gained by adopting it.

mencing after a confinement. It was first situated over the left lower jaw, then she experienced it worst over the left temporal region, and finally, the left side of the face generally became involved. The pain came on in attacks, which lasted for several days, followed by dizziness, which caused her to walk in a drunken

CASE 2.

Section of cerebellum showing aneurysm.

fashion. Shortly before admission to hospital the pain had travelled to the back of the neck. About two weeks previous to admission she suddenly experienced great failure of vision.

With the exception of bronchitis in childhood, and "bilious attacks" during the last two years, she had always had good health. She had had six children, and perhaps one miscarriage.

On examination she looked older than her years. The heart was normal, and the pulse regular and of good pressure and

quality. It was noticed that the brachials were tortuous, and the arteries generally, easily palpable. The lungs were normal. The examination of the nervous system may be put shortly as follows: On admission the patient was conscious, with clear speech and considerable vocabulary. Later she became stuporose. There was a right facial palsy, and paresis of the left arm and leg. The right pupil was larger than the left. The pupil reactions to light, accommodation, and the consensual reaction were normal at first. Later none of these reactions could be elicited. There was a noticeable weakness of both external recti. Double optic neuritis was present, at first more marked in the right eye.

The Wassermann reaction of the blood was negative. Examination of the cerebro-spinal fluid showed no organisms, but red blood corpuscles were abundant. A diagnosis of cerebellar tumour was made. She gradually became weaker in hospital. On February 23, 1921 Cheyne-Stokes respirations appeared, and she died the same day. I am indebted to Professor Teacher, for the following note on the post-mortem examination. "The inner and outer tables of the left occipital bone were completely eroded away, and the surface of the brain could be felt through the scalp. There was evidence of old haemorrhage over the cerebellum. Section of the brain proves the tumour to be an aneurysm of the left vertebral artery, originating just within the cranium. The aneurysm invaded the cerebellum chiefly, causing pressure on the area of the occipital bone where the erosion had taken place. The tumour measured one and a half inches in three diameters. Atheroma was present to a marked degree in the vertebral and posterior cerebral vessels, but examination of the aorta for evidence of vascular syphilis was made, with negative result. The aneurysm had not ruptured."

In connection with these cases, a search for similar cases was made in the post-mortem journals of the Pathological Department of the Glasgow Royal Infirmary. All the records of post-mortem examinations during the last fifteen years and such clinical records as came within the purview of the inquiry, were examined. In all 6,325 records were examined and 43 cases of cerebral aneurysm were found. In a search of this kind it is hard to decide, where to draw the line, as to which cases shall be included and which excluded. I quite recognize that there is a large class of dilatations existing, which the clinician would never regard as aneurysms, but which are noted on post-mortem examinations. I have only included those cases which could be readily recognized by the naked eye. For this reason my figures cannot be relied upon to give a true indication of the frequency of this condition. Another factor which militates against accuracy is that in the total number of post-mortem examinations, the head was not opened in every

case. Regarding the 43 cases noted, certain data are tabulated below. It will be observed that some of the clinical records are scanty. This is due to the fact that not a few of the patients were picked off the street in coma, and no history was available.

Of the total number of cases of cerebral aneurysm that went to post-mortem examination, 24 were males and 19 females. The oldest was a man of 72 years, and youngest that of a subject (age unstated) described as a young boy. Taking various arbitrary base lines, we notice that under 50 years of age, 34 cases occurred; under 45 years, 28 cases; under 40 years, 19 cases; and, a most significant fact, under 25 years of age, 10 cases occurred, or nearly 25 per cent. of the total number. The records show that the great majority died from sudden apoplexy, without any prodromal symptoms. Fifteen nevertheless showed some warning cerebral symptoms, usually headache and vomiting, but of this 15, in only 7 cases did the symptoms antecede death by more than a few days. All died of cerebral haemorrhage, with the exception of Mrs. N., one of the two cases described at length. With the exception of 4 cases all died of the rupture of the aneurysm. Of these 4 cases, 3 died of the rupture of another cerebral vessel, and one from intracranial pressure. Many of the cases showed ocular symptoms after the onset of cerebral haemorrhage, *e.g.*, conjugate deviation, unequal pupils, etc., but with the exception of the cases of Q.D. and Mrs. N. there is no record of the aneurysm *per se* giving rise to ocular symptoms.

In no case was was the existence of cerebral aneurysm ventured as a possible cause of death. In very few cases is there any record of the Wassermann reaction. This can be explained by the fact that the majority were admitted in coma and death ensued rapidly. However it is to me a surprising observation, in how few cases is there any mention of syphilis of the vessels. The usual post-mortem note is that the vessels, as far as could be observed, were healthy.

Regarding the question of the vessel most frequently affected in cerebral aneurysm, I have drawn up a table illustrating this point. As will be seen, one or other branch of the middle cerebral, in the great majority of cases, is the vessel involved. Some observers have worked out a majority in favour of the left middle cerebral, and although this vessel was affected most frequently in our series of cases, still the difference between the frequency of the left and the right is too slight for the basis of any conclusion. In two cases only in the series were two different vessels affected with aneurysm, thus the total number of aneurysms in this table amounts to 45. Where there were several aneurysms on one vessel, this naturally counted as one vessel affected.

TABLE SHOWING FREQUENCY OF VESSELS AFFECTED.

Right middle cerebral	10
Left middle cerebral	11
Left ant. cerebral	6
Right ant. cerebral	7
Sylvian artery	3
Ant. communicating	4
Basilar artery	3
Vertebral artery	1

With reference to the question of the causation of aneurysm in these cases, it will be seen from the table appended, that out of the total of 43 cases, no less than 25 cases are regarded as showing no sign of vascular or cardiac diseases, or other sign of a causal agent. Having knowledge of the work of Turnbull[10], I must conclude that these aneurysms are of congenital origin. Aneurysms of non-inflammatory origin are due to a degeneration of the media, he states, and this is frequently associated with generalized arterial degeneration and cardiac hypertrophy. In a number of cases, however, intracranial aneurysms belonging to the non-inflammatory group are discovered in young persons without evidence of cardio-vascular disease. Turnbull has put forward the explanation, that in these cases the formation of a breach in the media is due to an inborn defect in the arterial wall, and this explanation is of general acceptance.

Of the above-mentioned 25 cases, which for want of positive evidence to the contrary, I regard as congenital cases, four cases have no age mentioned, being described simply as "boy," "young man," "young woman," and "middle age." Leaving these cases out of count, we have 21 cases left, in which the age is definitely stated, and which may be considered to be due to congenital defect. The average age of this group is 31 years. This average age incidence is interesting, as Fearnsides found the average age to be 38 years.

Since writing the above, Symonds[9] has published a paper on subarachnoid haemorrhages, and with reference to this particular question, I cannot do better, than quote his own words. He says ". . . . and in this connection it is interesting to compare the age incidence of the group under discussion with that of Fearnsides' group of 15 cases of intracranial aneurysm, which in virtue of the absence of any other signs of cardiac or vascular disease, were considered to be due to congenital defect in the media. In the present group of 41 cases, the age incidence is 30, in Fearnsides' 15 cases the average age was 38 years. The correspondence is close."

Journal Number	Sex	Age	Symptoms of Cerebral Lesion	Ocular Symptoms	Rupture of Aneurysm	Rupture of other Vessel	First observed Symptom Coma	Died of Apoplexy	Diagnosed during Life	P.M. Notes	Notes in History
9145	M	23	+	—	+	—	—	+	—	Rupture of aneurysm of right middle cerebral	Previously always healthy, but headache, sick and vomiting a few hours before admission to hospital
9510	F	23	—	—	+	—	+	+	—	Rupture of aneurysm of left middle cerebral	Previously always healthy
9580	M	39	—	—	+	—	+	+	—	Rupture of aneurysm of left middle cerebral. Vessels healthy	Previously always good health
9661	M	40	—	—	—	+	+	+	—	Aneurysm of left anterior cerebral. Not ruptured	Previously always good health
9701	M	53	—	—	+	—	+	+	—	Rupture of aneurysm of left anterior cerebral. Vessels showed atheroma	History of alcoholism
9760	F	Young woman	—	—	+	—	+	+	—	Rupture of aneurysm of right anterior cerebral. Vessels healthy	Previously always healthy
9846	M	27	+	—	+	—	—	+	—	Rupture of aneurysm of right middle cerebral. Vessels healthy	24 hours before onset of coma, he had headache and vomiting
9877	M	45	+	—	+	—	—	+	—	Rupture of aneurysm of right anterior cerebral. Vessels healthy	A few hours before onset of coma, he had headache and vomiting

Journal Number	Sex	Age	Symptoms of Cerebral Lesion	Ocular Symptoms	Rupture of Aneurysm	Rupture of other Vessel	First observed Symptom Coma	Died of Apoplexy	Diagnosed during Life	P.M. Notes	Notes in History
9893	M	Middle age	+	—	+	—	+	+	—	Rupture of aneurysm of right middle cerebral. Vessels healthy	No history of health obtainable
9910	F	41	+	—	+	—	—	+	—	Rupture of aneurysm of Sylvian artery. Vessels healthy	Had been having unconscious turns frequently for years
9925	M	50	—	—	+	—	+	+	—	Rupture of aneurysm of left middle cerebral. Aneurysm of right middle cerebral also present. Atheroma	Always healthy, but P.M. signs of interstitial nephritis
10104	F	40	+	+	—	—	—	—	—	Aneurysm of right vertebral. Marked atheroma	Case described in text
10191	F	49	+	—	+	—	—	+	—	Rupture of aneurysm of anterior communicating. Arterio-sclerosis	Drowsy for some days before admission, with headache and vomiting
10299	M	38	+	—	+	—	—	+	—	Rupture of aneurysm of anterior communicating. Vessels healthy	Two weeks before death he was unconscious for several days
10334	M	42	+	—	+	—	—	+	—	Rupture of aneurysm of left middle cerebral. Marked arterio-sclerosis	Began to have fits, two weeks before death
11042	F	43	—	—	+	—	+	+	—	Rupture of aneurysm of anterior communicating. Vessels healthy	Previously always healthy

										Vessels healthy	
11063	M	17	—	—	+	—	+	+	—	Rupture of aneurysm of left middle cerebral. Vessels healthy	Previously always healthy
11064	M	23	—	—	+	—	+	+	—	Rupture of aneurysm of right middle cerebral. Vessels healthy	Previously always healthy
11094	F	55	—	—	+	—	+	+	—	Rupture of aneurysm of left middle cerebral. Marked atheroma	Albumen —
11099	M	23	+	+	—	+	—	+	—	Aneurysm of right middle cerebral and posterior communicating. Slight atheroma of cranial vessels	Described in text
6334	F	30	—	—	+	—	—	+	—	Rupture of aneurysm of anterior communicating. Vessels healthy	Previously had Bright's disease and uraemia
6519	F	52	—	—	+	—	+	+	—	Rupture of aneurysm of anterior communicating. Atheroma	Previously had nephritis. Albumen +, Sugar +, B.P. = 255 mm.
6728	M	52	—	—	+	—	+	+	—	Rupture of aneurysm of basilar artery. Syphilitic aortitis	No history obtained
7074	F	46	+	—	—	+	—	+	—	Aneurysm of right middle cerebral. Vessels healthy	Headaches. Seizures with unconsciousness
7080	F	44	+	—	+	—	—	+	—	Miliary aneurysms of vessels in cortex. Arterio-sclerosis	Several weeks before death she was stupid, loss of memory, nystagmus, and finally coma

Journal Number	Sex	Age	Symptoms of Cerebral Lesion	Ocular Symptoms	Rupture of Aneurysm	Rupture of other Vessel	First observed Symptom Coma	Died of Apoplexy	Diaguosed during Life	P.M. Notes	Notes in History
7086	M	72	—	—	+	—	+	+	—	Rupture of aneurysm of right anterior cerebral. Arterio-sclerosis	Previously always healthy
7104	F	46	—	—	+	—	—	+	—	Rupture of aneurysm of right cerebral. Vessels healthy	Headaches for three weeks before death
7513	M	42	—	—	+	—	+	+	—	Rupture of aneurysm of basilar artery. Marked atheroma and arterio-sclerosis	No history obtained
7522	M	47	—	—	+	—	+	+	—	Rupture of aneurysm of left anterior cerebral. Vessels healthy	Previous health good
7523	M	16	—	—	+	—	+	+	—	Rupture of aneurysm of left middle cerebral. Vessels healthy	Previous health good
7700	M	69	—	—	+	—	+	+	—	Rupture of aneurysm of of right cerebral. Marked atheroma and arterio-sclerosis	Urine Sugar — Albumen —
7784	F	32	—	—	+	—	+	+	—	Rupture of aneurysm of left anterior cerebral. Vessels healthy. Kidneys showed nephritis	Previously always healthy
8041	F	35	—	—	+	—	+	+	—	Rupture of aneurysm of left middle cerebral. Vessels healthy	Previously healthy

										Vessels healthy	
8147	M	Boy	—	—	+	—	+	+	—	Rupture of aneurysm of basilar. Vessels healthy	Previously always healthy
8501	F	26	—	—	+	—	+	+	—	Rupture of aneurysm of right middle cerebral. Vessels healthy	Previously always healthy
8509	F	41	—	—	+	—	+	+	—	Rupture of aneurysm of Sylvian branch of cerebral. Vessels healthy	Previously healthy
8589	M	41	—	—	+	—	+	+	—	Rupture of aneurysm of right anterior cerebral. Vessels healthy	Previously healthy
8660	F	62	—	—	+	—	+	+	—	Rupture of aneurysm of left middle cerebral. Atheroma	Nephritis with uraemic symptoms several times
8666	M	64	+	—	+	—	—	+	—	Rupture of aneurysm of left middle cerebral. Atheroma	Some time before death became mentally deranged
8716	M	Young man	—	—	+	—	+	+	—	Rupture of aneurysm of right anterior cerebral. Vessels healthy	Always healthy
8786	F	38	+	—	+	—	—	+	—	Rupture of aneurysm of right anterior cerebral. Vessels healthy	Headache and vomiting before death for some days. Albumen —
8860	M	Old man	—	—	+	—	+	+	—	Rupture of aneurysm of left middle cerebral. Also aneurysm on left anterior cerebral	Always had been healthy
9056	F	16	+	—	+	—	—	+	—	Rupture of aneurysm on circle of Willis between origins of anterior and middle cerebral. Vessels healthy	Headaches and dizziness a few days before death

Conclusions

(1) Beadles' largest class is 46 per cent., namely, those who died suddenly from an apoplectiform seizure without any preceding symptoms of cerebral origin. My figures suggest that this class includes a still larger percentage, as 29 of my 43 cases died in this manner.

(2) My records show that this is a condition that occurs frequently in youth, and tends to end fatally in the same period of life.

(3) All the pathological causes of cerebral aneurysm having been considered, some of which are atheroma, specific arteritis, embolism, heart diseases, trauma, vasomotor and other causes, we are thrown back on the theory that these dilatations of cerebral vessels are in many cases due to some congenital weakness in the vessel walls. I quote Fearnsides. "Investigators have suggested, that, in addition to certain factors such as increased blood pressure, there is an inherent inborn weakness, due to congenital abnormality in the structure of the arteries at their points of junction and bifurcation, and this leads to rupture."

(4) This study throws no new light on the symptomatology or aetiology of this condition, but it brings before us again its comparative frequency, and the necessity for a closer examination of possible cases, with a view to gaining further information on an important pathological condition.

I conclude by acknowledging my debt of thanks to Dr. Cowan and Professor Teacher, for assistance in a manner already indicated, and to Mr. Dalrymple, for two clever sketches.

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ANNOTATION

Eye Damage in General Anaesthesia

A recent paper by Blomfield in the *British Journal of Anaesthetics* (October, 1925, p. 66), calls attention to the increasing frequency of these conditions, and should be read not only by anaesthetists but also by ophthalmic surgeons. Blomfield attributes the increase mainly to the more general adoption of open methods which are in vogue at present in connection with surgical anaesthesia as against closed methods. He states that eye complications are almost entirely preventable.

The usual complications consist of: (1) a mild conjunctivitis, possibly due to the vapours of chloroform or ether, or mixtures of both; and (2) an actual corneal abrasion, burn, or patch of inflammation. It is true that, as Blomfield states, the eye complications are usually slight and transitory, but they may be serious, and in any case it is the anaesthetist's duty to take precautions to prevent them.

We are of opinion that most of these complication cases are due in the first place to the fact that the anaesthetist does not leave the eye sufficiently alone. Care should be taken to see that the eyelids are properly closed over the eye during the administration of a general anaesthetic. An abrasion may be due occasionally to clumsy handling with a rough finger nail; but an actual burn of the cornea from a drop of liquid falling on it when the lids are open is by no means an impossibility, and it is perfectly easy to understand that with open lids the edge or corner of a flannel mask, impregnated with liquid, might come into contact with the cornea.

Again many abdominal operations are performed in the Trendelenburg position, when the head is at the lowest part of an inclined plane. In such a case it would be possible, we do not say that it would be likely, for a small pool of anaesthetic liquid to form in the hollow of the orbit, and cause damage to the eye.

A patient who has undergone a straightforward operation for a chronic appendix or any other ailment would, with perfect justice, feel annoyed if the convalescence were interrupted or retarded by a sore eye due to the anaesthetic; and with a troublesome patient, legal proceedings might arise. It is not easy to convince patients that an abrasion of the cornea is a risk which is absolutely unavoidable in general anaesthesia, and the patient who is ever on the look-out to make trouble for the medical attendant is by no means a rarity.

We have recently seen two such cases. In one, a mild attack of conjunctivitis followed the administration of an anaesthetic for

an appendix operation. The patient was highly neurotic and the eye condition got on her nerves and on those of her mistress as well; with the result that her surgeon was bombarded daily with letters from the latter for about a fortnight, until a careful examination demonstrated that no actual damage to the sight had resulted. In the second case there was an abrasion of the cornea, and on account of the patient's poor general condition it took some days to heal.

We have said enough to draw the attention of our readers to these unpleasant accidents due to general anaesthesia, and no words are needed as to the treatment of such conditions, as this follows the ordinary rules of ophthalmic practice.

ABSTRACTS

I.—GLAUCOMA

(1) **Guist, C. (Vienna).—Orbital inflammation and glaucoma. (Entzündliche Orbitalprozesse und Glaukom.)** *Zeitschr. f. Augenheilk.*, p. 308, May, 1925.

(1) Referring to a case described by Seefelder (*Wien. Med. Wochenschr.*, 1924, Nr. 39-40) of a simultaneous serous tenonitis and glaucoma, **Guist** reports three cases of a similar inflammatory process in the orbit involving a secondary rise of tension.

The first case originally resembled an acute glaucoma, and an iridectomy was considered; three days later, however, symptoms developed confirming the diagnosis of a posterior scleritis of unknown (rheumatic?) origin; the second case was a typical tenonitis; the third an orbital cellulitis following involvement of the maxillary antrum. The symptoms common to the three were, oedema of the lids, chemosis, proptosis, loss of mobility of the globe, visual failure, with pain, vomiting, and fever, accompanied by a rise in ocular tension.

The first two, in default of a definite aetiological point of attack, were treated symptomatically by miotics, general antiphlogistic measures, milk injections, and aspirin. The first cleared up in 1½ months, the second in 20 days, the tension and the visual acuity returning to normal together. In the third the antrum was operated upon, and the eye had recovered within 12 days.

Guist considers the glaucoma due to venous engorgement, caused by blocking of the venous exit channels, either at the venae vorticosae (Cases 1 and 2) or in the orbital tissues (Case 3). In the first case he observed a definite venous stasis at the optic

nerve head. The treatment should be directed to the exciting inflammatory cause; an operation for the relief of tension is unnecessary.

W. S. DUKE-ELDER.

(2) **Malling, B. (Bergen).—Investigations with regard to the relationship between irido-cyclitis and glaucoma. (Untersuchungen über das Verhältnis zwischen Iridocyclitis und Glaukom.)** *Acta Ophthal.*, Vol I, fasc. 3.

(2) **Malling** publishes a second article on this subject, the first having appeared in the previous number of the "Acta Ophthalmologica." He has carried out experiments which have consisted in the compression of the globe by means of a Schiötz tonometer, usually with the 10 grm. weight in position but sometimes with the 15 grm., placed on the globe just above the limbus. At first the pressure was maintained for 7 minutes and the tension estimated in the usual way after 1, 2, 3, 5 and 7 minutes, but later, to simplify procedure, the pressure was maintained for only 3 minutes and no estimation of the tension made until after the tonometer had been removed. Thereafter a number of estimations of the tension were made during a period of 2½ hours. In all 59 cases were examined, 5 being normal and the remainder cases of glaucoma and various types of irido-cyclitis, and in no case did harm result from the examination. Malling found that the tension was first of all reduced, and then rose again after the weight had been removed, the rise being much slower in normal than in pathological cases. The degree of reduction of tension obtained was about the same for all the cases, with the exception of those of acute irido-cyclitis in which it was much less. The original figure was reached most quickly in cases of acute irido-cyclitis, next in cases of irido-cyclitis with increased tension, and considerably later in chronic irido-cyclitis, while in glaucoma varying results in this particular were obtained. In some pathological eyes the pressure rose to above the original figure, the amount of the rise being about the same in glaucoma, irido-cyclitis with increased tension, and acute irido-cyclitis, but considerably less in chronic irido-cyclitis. The maximum was again reached most quickly in acute irido-cyclitis.

Malling accepts it as proved that the ciliary body is the organ in the eye mainly concerned with the secretion of fluid, and considers that a means of judging its state would be available if exact information with regard to the secretion of fluid could be obtained. In his experiments the time taken to reduce the tension and the amount of reduction obtained indicate the state of the channels of outflow of fluid from the eye, while the time necessary for the regeneration of pressure and the degree of the rise express the degree of activity of the ciliary body. The latter was found

to be greatest in conditions of acute inflammation. He attempts to divide his cases of glaucoma into two groups, in one of which the activity of the ciliary body is increased while in the other the channels of outflow are blocked. His results tend to show that the prognosis for the trephining operation is better in the first group of cases than in the second. He concludes his article with accounts of eight cases in which he claims to have been helped in diagnosis and prognosis by his experiments.

E. H. CAMERON.

(3) **Kraupa, Ernst.—The occurrence of glaucoma in cases of diabetic cataract.** (**Glaukom bei Zuckerstar.**) Abs. *Zentralbl. f. d. gesam. Ophthal.*, July, 1924.

(3) The only treatment of any value in such a case is the extraction of the cataract. The danger of infection is considerable, as cataract as a rule only develops in the later stages of diabetes. The employment of the keratome is recommended as **Kraupa** thinks there is less risk than if the usual flap section is made. An iridectomy should be avoided if possible.

The term glaucoma diabeticum should be reserved for those cases in which the onset of the glaucoma is due to the general vascular changes brought on by the diabetic condition.

S. SPENCE MEIGHAN.

(4) **Onfray, René, and Plique, Jean (Paris).—Infantile glaucoma with recurrent perforations of the cornea taking place spontaneously.** (**Glaucome infantile avec perforations spontanées récidivantes de la cornée.**) *La Clin. Ophtal.*, December, 1924.

(4) **Onfray and Plique** report a particularly interesting case of bilateral hydrophthalmos in which the increased size of the eyeballs was noticed in the first few days of life. Perforations of the corneae began to occur in the first few weeks and continued in spite of treatment by iridectomy, pilocarpin and also "slight" mercurial treatment. The mother stated spontaneously that these perforations corresponded in time with the eruption of teeth and also with increases in the size of the eyeball. Then comes the interesting point that the Wassermann reaction of the mother was negative. The authors, however, did not themselves see the child till the age of fifteen months. They then found that the corneae measured about sixteen millimetres in the horizontal diameter, were opalescent and ectatic, that an iridectomy had been performed on the right eye during the early weeks, that the child was almost blind and *that the Wassermann reaction was strongly positive.* The child was put upon regular injections of novarsenobenzol which resulted in a very great improvement in the general condition and in the cessation of the perforations of the cornea. The authors

comment upon three points in this case: (1) The necessity of looking for hereditary syphilis in children even when there are no lesions other than the ocular; (2) the relative precocity and the repetition along with increases of tension, of the corneal perforations, both, for the most part, coinciding with the eruption of teeth. With regard to the very early perforations in the first few weeks they suggest that as nitrate of silver had been used by the medical man on account of some slight discharge—and one gathers that it had been used to excess—this may account for the earlier perforations; (3) the remarkable result of novarsenobenzol treatment as compared with the inefficacy of ordinary mercurial treatment, pilocarpin, and iridectomy.

ERNEST THOMSON.

(5) **Pesme, P., and Parinaud, F. (Bordeaux).—Oulectomy in the operative treatment of glaucoma. (L'oulectomie. Ses indications et sa place dans la traitment opératoire du glaucome.)** *Arch. d'Ophtal.*, May, 1925.

(5) The term "Oulectomy" (from οὐλή cicatrix), proposed by Panas and de Wecker, is interpreted by the Bordeaux school as "anterior subconjunctival scleral resection, performed at a varying interval after an iridectomy, in the line of its cicatrix, to supplement its effect."

Recurrence of hypertonus after iridectomy in glaucoma is not uncommon, statistics showing that in about one-fifth of the cases this happens sooner or later. In such instances further interference is usually advisable and **Pesme** and **Parinaud** consider that this form of sclerotomy deserves a trial. They report three cases in which the results were satisfactory both in the immediate reduction of tension and in the permanence of normal tension. One of their cases was acute glaucoma with recurrence of symptoms shortly after the iridectomy, the others were chronic cases in which the effect of iridectomy lasted for fourteen months and five years respectively.

J. B. LAWFORD.

(6) **Stefansson, J. (Winnipeg, Canada).—An operation for glaucoma.** *Amer. Jl. of Ophthal.*, September, 1925.

(6) **Stefansson's** operation is a modification of that described independently by Mayou and Zorab in *The Ophthalmoscope* for May, 1912. Instead of the silk thread, however, a gold wire is used, which is prepared in the following way: 22-carat gold wire, 1/5 mm. in thickness is used, a length of 18 mm. is taken and bent together into the form of a T, the two ends being fused at the base. The perpendicular length of the T is about 3 mm., the length of the base about 4 mm., which is slightly bent to conform with the curvature of the globe. The operation is performed

under cocain, the pupil being contracted with eserin. A large thick conjunctival flap is raised from the upper part of the globe and dissected up to the limbus but not beyond, *i.e.*, there is no splitting of the cornea. The flap is held forwards, a keratome incision is made obliquely into the anterior chamber commencing 1 mm. behind the limbus. The vertical arm of the wire T is now introduced through the incision into the anterior chamber, the base resting in the depression at the sclero-corneal junction. A special pair of forceps is used for this part of the operation. The conjunctival flap is then laid back over the wire, suturing being unnecessary if the eye is closed carefully. The eye is dressed on the second day after operation, and then daily. When the anterior chamber has fully re-formed, the point of the wire inset should be seen just behind the posterior surface of the corneal margin and well in front of the iris. No eserin is used after operation and the patient can be discharged from hospital in 5 to 8 days. With regard to results, 32 eyes have now been operated on by this method in 25 cases, and in none has there been the slightest sign of irritation or discomfort that could be attributed to the presence of the wire, except in the first case where the ends of the wire were not fused together, with the result that they penetrated the conjunctiva. The percentage results are: Total failures 9 per cent. (including a case with diabetes and nephritis), partial failures 13 per cent., successes 78 per cent. The paper concludes with details of the 25 cases.

F. A. WILLIAMSON-NOBLE.

BOOK NOTICES

Die Lehre vom Raumsinn des Auges. (Visual Perception of Space.) By FRANZ BRUNO HOFMANN, Professor at the University of Berlin. Part I, pp. 1-214, 1920; Part II, pp. 215-667, 1925. Berlin: Julius Springer.

Students of visual space perception have hitherto had to rely upon Helmholtz's "Physiological Optics," which has at last become available in the English language, Hering's still indispensable writings in Hermann's Handbook of Physiology and elsewhere, and current physiological and psychological literature. It is to be feared that most English students have obtained their information second-hand from text-books of physiology and psychology, and this is particularly so with regard to Hering's work, much of which is buried in journals difficult of access. Hering's views on space perception are still so important and so stimulating that it would be well worth while to reprint his chief contributions. Both of these chief sources are now almost

antique, and much work has been done since they were published. Hofmann has written a text-book which will remain the standard work for a long period. It is clearly and concisely written and brings every department of the subject well up to date.

The first part treats of relative localization in the frontal plane of the visual field, and includes articles on irradiation, visual discrimination, "projection," perception of size and form, geometrical optical illusions, etc.

The second part deals with retinal correspondence, eye movements, localization of direction and depth, and perception of movement. Every branch of the subject is discussed fully and with admirable judgment. Specially noteworthy is the description of the "Gestalttheorie," now so popular in some psychological circles, and its application to the complex problems of form and movement perception. There is a very full and accurate bibliography, and the book, whilst it can never replace the original sources, is an indispensable mine of information.

Though published as a section of the "Graefe-Saemisch Handbuch der Augenheilkunde," it is available as a separate and self-contained volume.

The Secret of John Milton. By HEINRICH MUTSCHMANN. Pp. 104. A limited number of separate copies to be obtained from the author at 8s. each. The University, Dorpat, Esthonia.

Mutschmann's book cannot fail to be of interest to students of Milton or to those who are interested in psychology and psychoanalysis. The main object of the author is to prove that Milton was an albino and therefore exceptionally susceptible to the phenomena of illumination, possessing moreover an almost morbid love of darkness. This thesis is considered from three different angles: (1) The conduct of his art, where the works written before the onset of glaucoma display remarkable evidence of photophobia and nyctalopia; (2) his habits. In actual life Milton seems to have avoided moving about in the light, notably before his blindness; (3) the description of his personal appearance and his portraits. He is described as exhibiting the typical outward signs of albinism.

The matter is treated under these three headings with great care and elaboration. For example, Aubrey in his description of Milton's appearance, makes the following statement:

abroun
" He had light browne hayre.
exceedingly
His complexion very fayre."
(" He was so faire that they called him the lady of Christ-Coll.");

in which Aubrey seems to have paraphrased "browne" into "abroun" and "very" into "exceedingly."

Quotations are then given from the New Oxford Dictionary showing that the word now known as auburn, meant in Milton's time whitish or very light and that the same was so in Shakespeare's works. The author's extreme thoroughness is at times rather amusing, thus the phrase "love darting eyes" in the description of the lady in Comus is regarded as an allusion to albinotic nystagmus.

With regard to the second heading, Milton's love of subdued light and his nocturnal habits when at Cambridge are well established from contemporary evidence. Under the first heading a large volume of evidence is brought forward showing that before the first attack of glaucoma in 1644, the light shade complex was "over weighted," and constantly clamouring for expression. Apart even from the actual subject matter the book is an interesting sample of what can be done by statistical and analytical methods in revealing the possible characteristics and complexes of an author by examination of his writings, although the present example is not very convincing.

Augendiagnose und Okkultismus. By PROF. F. SALZER. Pp. 98, with 4 plates and 10 figures in the text. Munich: Ernst Reinhardt. 1925. Price 3 marks.

Each country has trials peculiar to itself and some trials are common to all. That country where quackery is not rampant must be non-existent. Wherever we go the bonesetter, the charlatan, the quack, and the clairvoyant seem to flourish. The Fatherland appears, from a glance at this book, to be afflicted with a form of irregular practice in which, in place of the black box of E.R.A., the iris is made the seat of diagnosis for all sorts and conditions of diseases, merely by inspection. Much can, of course, be learnt from inspection, and the more we learn to use our eyes the better clinicians we shall turn out to be.

The chief exponent of "Augendiagnose" in Germany was, if we read the book aright, a parson who got into legal trouble by causing the death of a young baker by maltreatment of a "blinddarmentzündung," which we take to mean a case of appendicitis.

The author, who is a professor in Munich, goes into the matter of "Augendiagnose" fully from the historical and practical points of view. "Iriskopie" is a relic of astrological medicine, and is allied to the fatuous method of "seying the water," and diagnosing the medieval patient's complaint by looking at his urine.

Exponents of "Augendiagnose" remind one of Chaucer's physician.

> "In al this world ne was ther noon hym lyk
> To speke of phisik and of surgerye;
> For he was grounded in astronomye.
> He kepte his pacient wonderly wel
> In houres by his magyk naturel."

Many years ago, Frederick the Great adopted very short measures with a noted quack of his day, namely the Chevalier John Taylor, and gave him twenty-four hours in which to clear out of Prussia. We hope that the time is not far distant when similar measures, high-handed though they may seem, may be meted out to all irregular practitioners of medicine and allied sciences.

The well-meaning, but misguided enthusiast who conceives that he or she has a special mission of healing is to be pitied; while those who, and they form the major part of the fraternity, ply quackery for gain should be exterminated.

This brochure is well printed on good paper and makes very interesting reading. The low price should ensure its rapid and extensive diffusion and help to put an end to the activities of the "Pastor," who seems to have resembled Chaucer's physician in that if he had an extensive irregular practice in medicine, his duties in connection with a cure of souls must have been rather limited and—

"His studie was but litel on the Bible."

The average quack has always been "a verrey parfight practisour," and to most of them the final line on the physician in Chaucer's prologue applies with full force:

"Therfore he lovede gold in special."

The Report of the Madras Government Ophthalmic Hospital for 1924. By the Superintendent, MAJOR R. E. WRIGHT. Contains much valuable information and indicates the high character of the work performed in the Institution. 3,951 in-patients and 23,430 out-patients were admitted and 4,324 operations were performed during the year.

It is sad to read that, owing to financial stringency, the Government was obliged to restrict admissions, and that in consequence the number of operations for cataract fell from 1,613 in 1923 to 1,468 in the year under review. 3.2 per cent. of the patients operated on for senile cataract had a vision of less than 2/60 on discharge from hospital; but some of these might possibly be improved by further treatment. Four eyes were lost from infection (two primary and two secondary). One, a complicated case, was lost from expulsive haemorrhage. The rate of vitreous loss in the series was 1.9 per cent. Wright favours a complete iridectomy in all doubtful cases; but, when the iris is light coloured, has a really good tone, and shows no tendency to be washed into the wound by the irrigator stream, he prefers the simple operation. Button-hole iridectomy after lens delivery is occasionally performed. The irrigator is freely used in nearly every case. A corneo-scleral section is mostly made, but a bridge flap is fashioned in certain types of eyes.

Sclero-corneal trephining continues to hold its place as the routine operation for glaucoma, but a trial of iris inclusion was made on a few patients whose other eye had been successfully trephined.

Reference is made to the comparatively rare occurrence of sympathetic ophthalmitis in the East. This rarity must be familiar to most ophthalmic surgeons of wide Eastern experience. A record has been kept of those patients who might reasonably be expected to contract the disease; and 62 such have been noted since 1921. But not a single one has so far reported any trouble.

Notes and illustrations, contributed by other members of the staff, of many interesting and rare cases are included in the report.

CORRESPONDENCE

PHYSICIAN, SURGEON, SPECIALIST

To the Editor of THE BRITISH JOURNAL OF OPHTHALMOLOGY

SIR,—As the above title may seem somewhat cryptic I lose no time in stating that it has been suggested by two articles in the *Lancet* of October 17 and October 24, 1925. Although these two articles have no connection one with the other they seem to bear upon the same point, namely, the mutual interdependence of the various branches of medicine and surgery. The first article (October 17), by Bishop Harman, "Hospitals, General and Special," constitutes the Appendix to the Sixth Annual Report of the Voluntary Hospitals in Great Britain (excluding London). The second (October 24) is by P. Watson-Williams, "Anatomically Irregular Sphenoidal Sinusitis with Optic Neuritis."

Harman says: "The determination of the relative value of special and general hospitals must be based upon their working efficiency in regard to the patient. Which type of hospital is best for the patient, whatever be the nature of his ailment; and which in the long run fosters the best type of medical practitioner, that is to say, the practitioner most able to cope with the disability of the patient. . . . In my judgment there can be no doubt that the general hospital is better than the special hospital, better for the patient, and better in that it cultivates a superior type of medical work." Considerations of space prohibit the full statement of Harman's argument. It is temperately developed and makes all due allowance in favour of the special hospital under certain circumstances, but, nevertheless, is strongly in favour of the general hospital with special departments, so that the patient may

get the full benefit of all the departments if necessary. In this connection it is pointed out very truly that the necessity for a specialist to be in touch with all medicine and surgery is shown by the appointment of specialists in other departments on the staffs of special hospitals. It is possible, indeed it is extremely likely, that there will not be agreement in all quarters with Harman's point of view and that there will be many enthusiasts holding the opposite opinion. That there is much to be said for the general as against the special hospital is well illustrated by Watson-Williams' two cases. Here the patients' safety depended upon the highest degree of skill on the part of a nasal surgeon. These two patients each suffered from sphenoidal sinus disease with which eye symptoms were associated. In the one case the left sphenoidal sinus was large and healthy and easily reached through either nasal passage, the right sinus small and highly infected. In the other case a large right sinus was infected while the small left one was healthy. The difficulty of diagnosis in such cases of irregularity of the sinuses is obvious, and it illustrates the advantage of having everything, so to speak, under one roof in rather an emphatic way. Do you think, Sir, that the readers of this journal might be invited to express their opinions in the correspondence column?

Yours truly,

ERNEST THOMSON.

STIRLING.

OPHTHALMIC FOLK-LORE

To the Editor of THE BRITISH JOURNAL OF OPHTHALMOLOGY

SIR,—In view of your annotation on ophthalmic folk-lore (*Brit. Jl. of Ophthal.*, Vol. IX, pp. 638-9), the following extracts from a little-known book may interest your readers.

These extracts are translated from "Meddygon Myddfeu,"[a] the Welsh medical work said to have been composed in the 13th century by Rhiwallon, medical attendant to Rhys Gryg, lord of Llandovery and Dinefwr.

1. "A recent blow or a recent wound on the head. The sooner it is dressed the better lest blood should come on to the dura mater and coagulate there. From the time of raising the bone from the dura mater take violet and fresh butter and rub them together. If no violet is available take white of egg, and linseed, and rub them together, and place them to the wound, and then make an ointment of herbs and butter and tallow, and place them to it till it is healed. For that work of mercy the debt to the physician is a pound without food, or a hundred and eighty pence with food."

2. "For pain in the eye. A cauterizing in the hollow under the eyebrow and another at the nape of the neck; and that is good for catarrh of the head."

3. "For red watering eyes.[b] Place a seton under the two jaws and a cautery at the nape of the neck; and that is good for a running from the head."

4. "For severe dryness of the lids.[c] Take the juice of strawberries, the fat of a fowl, and May butter; press them together and place them in a horn, and when thou goest to sleep anoint thine eyes and thy lids well, and they will be healed."

5. "There are seven enemies to the eye: Weeping, watching, a growth, intoxication, adultery, a dry film, and smoke."

6. "For a film on the eye. Let the juice of ground-ivy be placed in it, and the film will break and the eye will be well and bright."

7. "The small boy who persistently cries. Anoint the two supraciliary ridges with the bone-marrow of a deer, and less frequent will be the weeping."

Among directions for maintaining health during each month of the year:

8. "Month of February. Bleed the thumb of the left hand. Obtain a salve and a draught, and that will keep the eyes well."

9. "For a film on the eye. Put in it the juice of ground-ivy."

A Latin fragment is attached to the text. In this is found:

"The juice of wormwood taken with honey and vinegar is useful to the sight, and makes the eyes clear."

Yours truly,

STOCKPORT. G. APTHOMAS.

P.S.—[a] Diverres. Le plus ancien texte des Meddygon Myddfeu, published by le Dault, Paris, 1913. Diverres takes [b] to refer to dacryocystitis, and [c] to blépharite glandulo-ciliaire.

OBITUARY NOTICE

DAVID CHARLES LLOYD OWEN, M.D., F.R.C.S.I., for many years a member of the honorary staff of the Birmingham Eye Hospital and a leading ophthalmic surgeon in the Midlands, died suddenly on Christmas night after a short illness, at the age of 82 years. His death took place at his home at Bron-y-Graig, Harlech, where for some years he and Mrs. Lloyd Owen, who died in the autumn of 1924, had lived with their elder married daughter and her husband, Colonel George Lloyd.

Born in 1843, a son of the Rev. D. Owen originally of Darowen, Montgomery, Lloyd Owen received his medical education at the

Sydenham College and General Hospital, Birmingham. Qualifying in 1865, he held for two years the house-surgeoncy of the Eye Hospital, at that time a one-man post. Five years later, having in the meantime engaged in general practice, studied for a time in Paris, and been appointed ophthalmic surgeon to the Children's Hospital, he was elected an honorary surgeon to the Eye Hospital. (The writer of this note was the house surgeon of the hospital at that time.) Having a knowledge of refractive errors and skill in the use of the ophthalmoscope, which the seniors of those days had not acquired, being an excellent operator, and a particularly resourceful prescriber, he soon obtained high repute. Personally he was a charming man with a kindly genial manner, plenty of humour, and a handsome and expressive face. He formed many lifelong friendships in Birmingham.

Lloyd Owen joined the profession early enough to be intimate with Richard Middlemore in that veteran's later years. He was an original member of the Ophthalmological Society of the United Kingdom and one of its vice-presidents; one of the founders and the first president of the Midland Ophthalmological Society; and at one time president of the Midland Medical Society. He was a Knight of Grace of the Order of St. John of Jerusalem, and Vice-Chairman of the British Ophthalmic Hospital at Jerusalem. Though a great reader in several languages, and specially interested in the history of medicine, he wrote little. His chief contributions were a translation of Giraud-Teulon's "Function of Vision and its Anomalies" (1880) in which the characteristic lucidity of the French is admirably reproduced, a small volume on "Ocular Therapeutics" (1890), his Middlemore Lecture on "Pain in Eye Disease, its Character and its Relief" (1896), and the memoir of Richard Middlemore (1920), (*Brit. Jl. of Ophthal.*, Vol IV, p. 49).

In 1898, when his period of active service at the Eye Hospital ended, he accepted the position of ophthalmic surgeon to the General Hospital, where the duty was chiefly consultative and much less arduous, and this he held till 1913.

Outside his profession also he had many activities and interests. He was a Justice of the Peace for the County of Warwick and the Borough of Sutton Coldfield, a prominent Freemason, a Positivist, a one-time president of the Birmingham Cosmopolitan Club, a student of Esperanto, and an archæologist. He founded the Birmingham Welsh Society and on retiring to Wales was presented with a replica of the presidential badge. His last few years were spent in the lovely surroundings of his Welsh home, where from a delightful hillside garden backed by great rocks and traversed by a mountain stream he could enjoy a glorious view of Snowdon and the neighbouring mountains. Here the writer had the pleasure of visiting him in the autumn of 1924.

P.S.

NOTES

Prize

THE von Graefe prize of the German Ophthalmological Society has been awarded to Prof. Seidel, of Heidelberg, and Prof. von Szili, of Münster, jointly.

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Ophthalmological Society of Egypt

THE Annual Meeting of the Ophthalmological Society of Egypt will be held at the Memorial Ophthalmic Laboratory, Giza Ophthalmic Hospital, on March 5, 1926.

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Appointment

MR. CECIL B. F. TIVY has been appointed surgeon to the Plymouth Royal Eye Infirmary.

FUTURE ARRANGEMENTS

1926

February 5.—North of England Ophthalmological Society at Liverpool.

February 12.— Royal Society of Medicine, Section of Ophthalmology.

March 5.—North of England Ophthalmological Society at Sheffield.

March 12.—Royal Society of Medicine, Section of Ophthalmology (Clinical).

April 9.—North of England Ophthalmological Society at Newcastle.

April 29—*May* 1.—Ophthalmological Society of the United Kingdom (Annual Meeting).

May 10.—Société française d'Ophtalmologie, Annual Congress, at Paris.

May 14.—Royal Society of Medicine, Section of Ophthalmology.

June 11.—Royal Society of Medicine, Section of Ophthalmology (Annual).

July 14—17.—Oxford Ophthalmological Congress.